



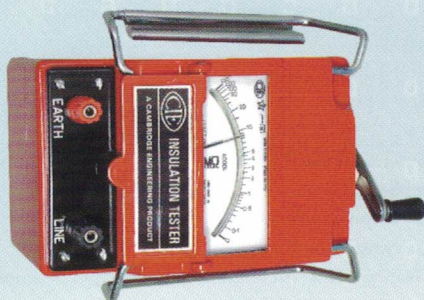
# CAMBRIDGE INSTRUMENTS & ENGINEERING CO.

## INSTRUMENTS FOR ACCURACY & RELIABILITY SINCE 1963

### INSULATION TESTER

Confirms to ISS : 2992:1987

### HAND DRIVEN GENERATOR TYPE (High Sensitive Cross Coil Indicator)



#### METAL BODY

MODEL : CIE/444

Anti magnetic aluminium body, centrifugal clutch, protected flap over glass window, collapsible driven generator handle, Anti-parallax mirror scale, Guard Terminal & an externally accessible infinity adjuster are provided for instrument having insulation range 1000 M $\Omega$  & above

Scale Length : 90mm (approx.)  
Rotation Speed : 160 or more r.p.m.  
Weight : 2.5 kg (approx)  
Dimensions (in mm) : 110 x 128 x 195 (approx)  
Accuracy : As per ISS : 2992-1987

#### Range Available

Available from 100V to 5000V DC o/p voltage with suitable resistance range. Multiple ranges available at options provided with range selector switch.



#### WOODEN BODY

MODEL : CIE/666

Housed in wooden body with runmica finish, centrifugal clutch, collapsible driven generator handle, Anti-parallax mirror scale, Guard Terminal & an Externally accessible infinity adjuster are provided for instrument having insulation range 1000 M $\Omega$  & above

Scale Length : 100mm (approx.)  
Rotation Speed : 160 or more r.p.m.  
Weight : 4.1 kg (approx)  
Dimensions (in mm) : 265 x 65 x 185 (approx)  
Accuracy : As per ISS : 2992-1987

#### Range Available

Available from 100V to 10000V DC o/p voltage with suitable resistance range. Multiple ranges available at options provided with range selector switch.



#### BAKELITE BODY

MODEL : CIE/555

Housed in high grade moulded bakelite body, collapsible driven generator handle, two push buttons provided for connection and designed to accommodate standard cable or 4 mm plug

Scale Length : 75 mm (approx.)  
Rotation Speed : 160 r.p.m.  
Weight : 1.4 kg (approx)  
Dimensions (in mm) : 155 x 104 x 70 (approx)  
Accuracy : As per ISS : 2992-1987

#### Range Available

Available from 100V to 1000V DC o/p voltage with suitable resistance range. Special resistance range can also be manufactured against specific enquiry.

### MOTORISED INSULATION TESTER

MODEL : CIE/777



Scale Length : 100mm (approx.)  
Mains Supply : 230V, 50Hz  
Accuracy : As per IS : 2992-1987  
Dimensions : 14 x 10 x 10 (approx)  
(in inch.) including top cover  
Weight : 9 Kg (approx.)

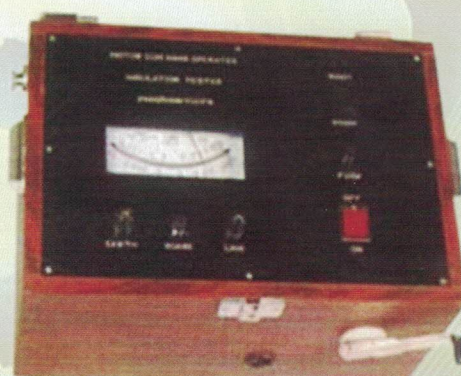
Scale Length : 100mm (approx.)  
Mains Supply : 230V, 50Hz  
Accuracy : As per IS : 2992-1987  
Dimensions : 14 x 10 x 10 (approx)  
(in inch.) including top cover  
Weight : 12 Kg (approx.)

- ★ Can also be operated by Hand
- ★ Collapsible Generator handle
- ★ Centrifugal clutch (Governor) for constant output voltage

Suitable for Polarization Index (P.I.) Test.

### MOTOR-CUM-HAND OPERATED

MODEL : CIE/777HM



Suitable for Polarization Index (P.I.) Test.

Housed in seasoned wooden cabinet with sunmica finish, motor operated by 230 volts, 50Hz AC mains, suitable for polarization index tests.

**(Polarization Index = Resistance after 10 min./Resistance after 1 min.)** better results are obtained by using longer time periods, anti parallax mirror scale, highly sensitive cross-coil indicator. Generally available from 100V to 5000V DC o/p voltage (Single or multiple output range at options) with respectively suitable insulation range from 10M $\Omega$  to 1,00,000M $\Omega$  depending upon the o/p voltage range chosen. (Multi range instruments are provided with range selector switch) Special (higher) resistance range can also be manufactured against specific enquiries. Instrument also available having single DC output voltage 10,000V with suitable resistance range. (Note : Anti-parallax mirror scale is not provided for Triple range & above instruments)

**Standard Accessories :** Mains cord (2 m length) - 1 No

**Optional Accessories :** (At Extra Cost). H. V. Testing leads - 1 pair (2 m length), Carrying Case.

**Extra Facility (Optional) :** 15 minutes Timer Facility (at extra cost)

- **Response Time :** 3 seconds
- **I.R. TEST :** Better than 50 Megahms at 500V D.C. between the electrical circuit & containing case.
- **H.V. TEST :** Withstands min. 2KV or (rated voltage + 1) KV A.C. (r.m.s) for one min. between the electrical circuit & containing case :





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## DIGITAL INSULATION TESTER

3½ Digits, L.C.D. (Provided with Ni-cd Re-chargeable Battery)

**MODEL : DIT/5005**

- Rugged ABS Body
- Lo-Bat Indication
- Easy to use hand held
- Facility as to make bench top type instrument

Available in following ranges

- (i) 500V DC/0-200 MΩ
- (ii) 500V DC/0-1000MΩ
- (iii) 1000V DC/0-200MΩ
- (iv) 1000V DC/0-2000MΩ

Other ranges can be manufactured on specific enquiry

Display	: 3½ Digits, L.C.D.
Accuracy	: Insulation $\pm 3\%$ of F.S. $\pm 5$ digits Out put Voltage (DC) $\pm 10\%$ at rated resistance
Confirms to	: ISS 10656-1983
Dimensions (in mm)	: 172 x 98 x 38 (Approx.)
Weight	: 550 gsm (Approx.)
H. V. Test	: 2KV AC (r.m.s.) For 1 min. Between electrical circuit and containing case
Insulation Resistance Test	: More than 50 MΩ at 500V DC between electrical circuit & containing case.
Standard Accessories	: (i) Carrying Case (ii) Charging Cord (iii) Testing Lead (1m length) (iv) Instruction Manual

### SPECIFICATIONS :

- DISPLAY = 16 X 2 Jumbo Alpha Numeric.
- High Voltage Output Indicator.
- KV Selection Switch (1KV, 2.5KV, 5KV)
- Mode Selection Switch (IR, DAR, PI)
- Terminals (Line, Earth, Guard)
- Start/Stop Button
- Max. O/P Voltage between terminals and Earth Ground : 5000V DC
- POWER SUPPLY : 230V AC, 50HZ ( $\pm 10\%$ )
- Power Switch (Back Panel)
- Dimensions (in mm) : 275 x 285 x 120
- Weight : Approx 3Kg. (Including Power Cord)

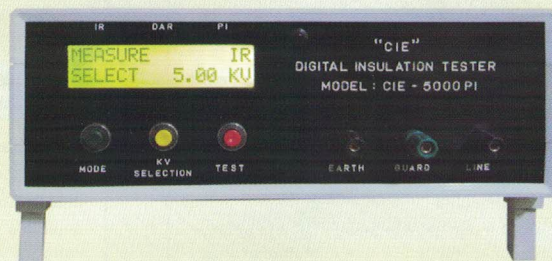
RANGE	20GΩ/1KV	50GΩ/2.5KV	100GΩ/5KV
Test Voltage	DC 1000 V $\pm 10\%$	DC 2500V $\pm 10\%$	DC 5000V $\pm 10\%$
Measuring Range	20MΩ ~ 20GΩ	50MΩ ~ 50GΩ	100MΩ ~ 100GΩ
Accuracy	$\pm 3.0\%$ rdg $\pm 5$ digits	$\pm 3.0\%$ rdg $\pm 5$ digits	$\pm 5\%$ rdg $\pm 5$ digits

ACCESSORIES : • Test Leads • Power Cord (AC 230V) • Carrying Case  
• Operation Manual • Manufacturer's Calibration Certificate

### MICROPROCESSOR BASED

## H.V. DIGITAL INSULATION TESTER WITH P.I. & DAR

**MODEL : CIE-5000PI**



## DIGITAL EARTH (RESISTANCE) TESTER

3½ Digit L.C. Display (Provided with Ni-Cd Re-chargeable Battery)

(4 Terminals Type) For Measurement of Earth Resistance & Soil Resistivity

Housed in Rugged ABS Body, Facility as to make bench top type instrument

**MODEL : DET-2000**

Display	: 3½ digits LCD
Accuracy	: $\pm 1.5\%$ (effective range)
Dimensions in (mm)	: 172 x 98 x 38 (approx.)
Weight	: 575 gm (approx.)

Available in following Dual Ranges

- (a) 0-20-200Ω (b) 0-10-1000Ω (c) 0-5-500Ω
- (d) 0-100-1000Ω (e) 0-10-100Ω

Any other combination of ranges can also be made on specific requirement.

Standard Accessories : (i) Carrying Case  
(ii) Charging Card, (iii) Instruction Manual  
Optional Accessories (At Extra Cost) : Testing Kit



**MODEL : DET-2000**

**MODEL : DET-2**

- Microprocessor Based
- Resolution : 0.001Ω
- Autoranging
- Ten Memories
- Range : 0-2-20-200- 2000Ω (Auto Ranging)

### TECHNICAL SPECIFICATION :

Display	: 3½ digits LCD Display
Resolution	: 0.001Ω
Accuracy	: $\pm 1\%$ rdg $\pm 3$ Digit
Memory	: Last Ten Memories
Maximum Output	: 50 V A. C.
Voltage	
Frequency	: 200Hz $\pm 10\%$



**MODEL : DET-2**

## ANALOGUE EARTH TESTER (HAND DRIVEN GENERATOR TYPE)

**MODEL : CIE/222M**

Confirms to ISS : 9223/1979

**3 Terminals & 4 Terminals**

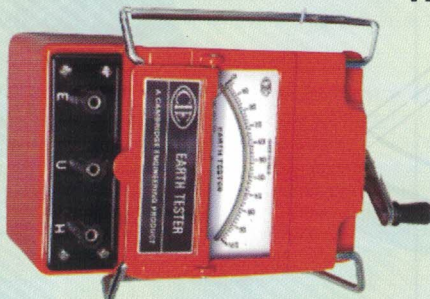
Housed in anti-magnetic aluminium casted body with protected metallic flap over glass window of scale, collapsible driven generator handle, centrifugal clutch (Governor) for constant output voltage, anti parallax mirror scale.

Scale Length	: 80 mm (approx.)
Accuracy	: $\pm 5\%$ F.S.D. (as per IS : 9223/1979)
Generator Rotation Speed	: 160 r.p.m. or more
Weight	: 2.5 Kg (approx)
Dimension (in mm)	: 110 x 128 x 190 (approx)
Types	: Available in three terminals (For measurement of Earth resistance) & four terminals (for measurement of Earth resistance & soil resistivity both)

### Range

- (i) Available in single range from 0-1Ω to 10,000Ω (any one range)
- (ii) Also available in multirange provided with range selector switch to be chosen from (0 - 1Ω to 10,000Ω)

Optional Accessories (At Extra Cost) i) Carrying Case, ii) Testing Kit



- **Response Time** : 3 seconds
- **I.R. TEST** : Better than 50 MΩ at 500V D.C. between the electrical circuit & containing case.
- **H.V. TEST** : Withstands 2KV AC (r.m.s.) for one min. between the electrical circuit & containing case :





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## DIGITAL MICRO-OHM METER (4 WIRE MEASUREMENT Technique)



1.5A DC Currents with Resolution  $1\mu\Omega$   
in Range 0-1999 $\mu\Omega$

MODEL : MR-253A

### Technical Specifications :

Display :  $3\frac{1}{2}$  digits, 1999 counts, seven segment LED Display  
Range : 0-1999 $\mu\Omega$ /19.99m $\Omega$ /199.9m $\Omega$ /1999m $\Omega$ /19.99 $\Omega$ /199.9 $\Omega$ /1999 $\Omega$ /19.99k $\Omega$   
Accuracy :  $\pm 0.5\%$  2digits  
Power : 230V, 50Hz, single phase  
Size : 192mm (W) 96mm (H) 230mm (D) approx  
Weight : 2.25 Kg (approx)  
Accessories : 2 Pairs of Testing leads (Red & Black)



10A DC Currents with Resolution  $0.1\mu\Omega$   
in Range 0-1999.9 $\mu\Omega$

MODEL : LR 4510A

### Technical Specifications :

Display :  $4\frac{1}{2}$  digits, 19999 counts, LCD Display  
Range : 0-1999.9 $\mu\Omega$ /19.999m $\Omega$ /199.99m $\Omega$ /1999.9m $\Omega$ /19.999 $\Omega$ /199.99 $\Omega$ /1999.9 $\Omega$ /19.999k $\Omega$   
Accuracy :  $\pm 0.03\%$   $\pm 2$ digits  
Power : 230V, 50Hz, single phase  
Size : 358mm (W) 152mm (H) 330mm (D) approx  
Weight : 10 Kg (approx)  
Accessories : 2 Pairs of High Amp. Testing leads (Red & Black)

## PHASE SEQUENCE INDICATOR (Disc Rotating Type)

Model PSI-1



Housed in Bakelite Body  
Rating : 30 Seconds @500 Volts  
Burden : 15VA @500 Volts

Working Voltage :

100V to 500V A.C. at 25 to 65 Hz  
To be used in horizontal position only.  
Supplied along with 3 Nos. 1 meter long testing leads (R,Y,B) with crocodile clip & one carrying case

The Instruments should not be left in circuit

## PHASE SEQUENCE INDICATOR (Disc Rotating Type)

Model PSI-2



Housed in ABS moulded casing 96mm x 96mm  
Rating : 30 Seconds @500 Volts  
Burden : 15VA @500 Volts

Working Voltage :

50-500 Volts A.C. (Horizontal Position)  
100-500 Volts A.C. (Vertical Position)  
At frequency 25-60 Hz  
Complete with carrying case and testing leads.

## OIL TEST SET

### 7000 Series

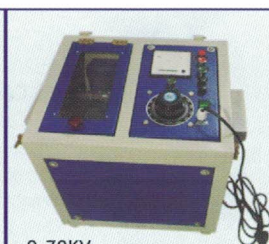
Ideal for speedy and accurate testing of Breakdown/withstand test of transformer oil an circuit breaker oil, in accordance with IS 6792 : 1992 for oil testing.

MODEL NO.		Output Voltage (AC Volts)**	Capacity	Input	Duty
Motor Operated	Manual Operated				
CIE / 7050 MOT	CIE/7050	0 - 50 KV	500 VA	230 V $\pm 10\%$ 50Hz, Single PHASE AC	Intermittent (5 min. ON, 10 min. OFF.)
CIE / 7060 MOT	CIE/7060	0 - 60 KV	600 VA		
CIE / 7070 MOT	CIE/7070	0 - 70 KV	700 VA		
CIE / 7080 MOT	CIE/7080	0 - 80 KV	800 VA		
CIE / 7090 MOT	CIE/7090	0 - 90 KV	900 VA		
CIE / 7100 MOT	CIE/7100	0 - 100 KV	1000 VA		
CIE / 7120 MOT	CIE/7120	0 - 120 KV	1200 VA		

**Special Features :** • Mains ON/OFF switch • Neon Lamps to indicate L.T. ON & H.T. ON  
• Auto-transformer for smooth & continuous variation of output voltage. • Zero start interlocking • HT chamber door interlocking • Overvoltage indication • Lamp to indicate "Regulator not at zero" for Motorised Set. • Memory device with push button switch to show the break down voltage. • 96sq. mm. AC moving iron type voltmeter connected to the L.T. side and scaled in KV. • Provided with Test Vessel (Oil Cell) made from non-absorbent insulating material fitted with two brass spheres of diameter between 12.5 to 13mm, placed at a distance of 4mm or 2.5mm. A gauge is provided along with the cell to adjust the gap.



0-60KV

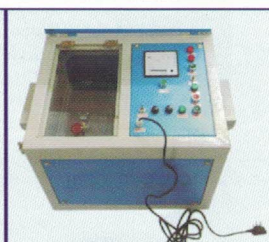


0-70KV

### MANUAL



0-100KV



0-60KV

### MOTORISED



## A.C. HIGH VOLTAGE BREAKDOWN TEST SET

MODEL : CIE/5050A

Input voltage : 230V,  $\pm 10\%$  50Hz, 1 phase AC  
Output voltage : Continuously variable from  
: i) 0 to 3 KV for 3 KV Test Set  
: ii) 0 to 5 KV for 5 KV Test Set  
Capacity : 50mA maximum in the H.V. Side  
Tripping Current : 25mA & 50mA (Toggle switch provided)  
Duty Cycle : Intermittent i.e., 5 min. ON & 10 min. OFF  
Mode of Operation : Manual

• KV Meter to read the output voltage  
• milliammeter to show leakage current  
\* Tripping current set point other than standard setting can be provided at extra cost.

## RELAY TEST SET

MODEL : RTS 5



Input : 230V,  
Single Phase 50Hz AC.  
Duty Cycle : Intermittent i.e.  
5 mins. "ON" or 10 mins. "OFF"

### Output

1) AC Current Output (Continuously variable)  
MAX. 400VA  
0-1/2/5/10/20 Amp. at 4 Volts / 14 Volts  
0-50/100A at 4 Volts.  
0-200A at 4 Volts. (for 30 sec.)  
or  
0-240Volts A.C. at 1A

2) Output fixed Voltage 50V & 110VAC at 3A

MODEL : RTS 5B

### Output

1) AC Current Output (Continuously variable)  
MAX. 1200VA

0-1/5/10 A at 6 Volts / 100 Volts.

0-20/50/100/200 Amp. at 6 Volts.

2) AC Voltage Output : Continuously

Variable 0-240V AC.

Capacity - 240VA (Max)

or

3) DC Voltage Output :

Continuously Variable 0-240V DC.

Capacity - 240VA (Max)





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### DIGITAL MULTIMETER

MODEL : DM 321T

3½ Digits, True RMS, Manual Ranging

With Holster, Auto Power Off, Data Hold & Back Light, A/V Continuity Test, Capacitance Test, Tr. (hFE) Test

DC Voltage : 200 mV, 2 V, 20 V, 200 V, 1000 V  
AC Voltage True RMS : 2 V, 20 V, 200 V, 750 V  
DC current : 20 µA, 2 mA, 20mA, 200 mA, 20 A  
AC current TRUE RMS : 20mA, 200 mA, 20A  
Resistance : 200 Ω, 2 K Ω, 20 K Ω, 200 K Ω, 2 M Ω, 20 M Ω  
Capacitance Auto Ranging : 2 nF~ 20mF

Transistor Test, Continuity Test & Diode Test, Auto Power Off,  
Low Batt. Indication, 9 Volt Battery Operated,  
Dimension & Weight : 175 x 93 x 55 mm, & Approx. 400 gms. (incl. Batt.)  
Accessories Supplied : Test Leads, User Manual & Battery (Installed / Kept Aside)



### DIGITAL MULTIMETER

MODEL : DM 235

3½ Digits, Manual Ranging

With Holster, Auto Power Off, Continuity Test, Diode, Capacitance & Tr. (hFE) Test

DC Voltage : 200 mV, 2 V, 20 V, 200 V, 1000 V  
AC Voltage : 2 V, 20 V, 200 V, 750 V  
DC current : 2 mA, 20mA, 200 mA, 20 A  
AC current : 20mA, 200 mA, 20A  
Resistance : 200 Ω, 2 K Ω, 20 K Ω, 200 K Ω, 2 M Ω, 20 M Ω, 200 M Ω  
Capacitance : 2000 pF, 20 nF, 200 nF, 2 µF, 20 µF  
Continuity Test & Diode & Tr. (hFE) Test, Auto Power Off, Low Batt., Indication, 9 V Batt. Operated  
Dimension & Weight : 170 x 87 x 35 mm & Approx. 210 gms. (incl. Batt.)  
Accessories Supplied : Test Leads, User Manual & Battery (Installed / Kept Aside), HOLSTER

## DIGITAL CLAMP METER

1000 A AC/DC

3¾ Digits, 3999 Counts, LCD

MODEL : DCM 5410

DC Voltage : 0.4/4/40/400/1000V (Auto)  
AC Voltage : AC Voltage : 4/40/400V/700V (Auto)  
DC Current : 400/1000A  
AC Current : 400/1000A  
Resistance : 400/4K/40K/400K/4M/40MΩ (Auto)  
Capacitance : 4n/40n/400n/4µ/40µF (Auto)  
Frequency : 40/400/4k/40kK/100kHz (Auto)  
Duty Cycle : 0.1% to 99.9%  
Temperature : - 40°C to 750°C

Size & Weight : 250mm x 99mm x 43mm (approx); Approx 480g

Audible Continuity and Diode Test,  
Auto Power off, data hold facility.

Standard Accessories :

- Operator's Instruction Manual
- Set of Test Leads • "K" type thermocouple,
- Plastic Carrying Case • 9volt battery.



1000 A AC

3½ Digits, 1999 Counts, LCD

MODEL : DCM 2250

AC Current : 20/200/1000A  
AC Voltage : 750V  
DC Voltage : 1000V  
Resistance : 200/2000Ω

Diode & Audible continuity  
Test Facility, Data Hold Facility

Size : 250mm x 99mm  
x 43mm (approx)  
Weight : Approx 460g

MODEL : DCM 2250 F

AC Current : 20/200/1000A  
AC Voltage : 750V  
DC Voltage : 1000V  
Resistance : 200/2000Ω  
Frequency : 2kHz

Diode & Audible continuity  
Test Facility, Data Hold Facility

Accessories : Test Leads, 9Volt Battery, Plastic Carrying Case  
Instruction Manual, Mfr Calibration Certificate



Phantom Load Test Set



High Vacuum Transformer Oil  
Filtration and Dehydration Plants

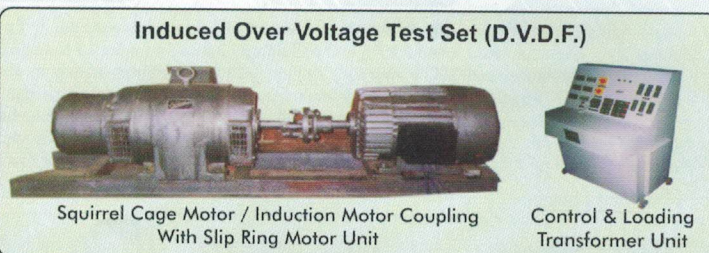


Primary Current  
Injection Test Set



TRANSFORMER TURNS RATIO METER  
MODEL : TTR5-100

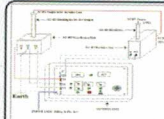
range of ratios from 0.800 to 2021. The ratio resolution is 0.1%. Phase deviation measurements are carried out in two ranges. Namely ±5 cent-radians (1CR=34 minutes.) Accuracy ±0.25% of reading.



Induced Over Voltage Test Set (D.V.D.F.)

Squirrel Cage Motor / Induction Motor Coupling  
With Slip Ring Motor Unit

Control & Loading  
Transformer Unit



HIGH VOLTAGE TEST SET  
AC OR DC OR AC/DC COMBINED

Available from 0-3KV to 200KV as per order or suitability of range & capacity.  
Capacity : 10mA to 1Amp. Maximum in H.V. Side of Different Ranges  
Duty : Intermittent (i.e. 5 minutes "ON", 10 minutes "OFF")  
Input : 230V± 10% or 415V ±10% (2PH of 3PH) 50Hz AC

Note : All "CIE" Instruments are warranted for a period of 12 months against any manufacturing defect.  
Each Instrument is supplied with instruction manual, manufacturing calibration certificate, warranty certificate.

"CIE" in a continuing effort to offer excellent products at a fair value, reserves the right to change models, specifications and designs without notice.

Manufactured & Designed by :

# CAMBRIDGE INSTRUMENTS & ENGINEERING CO.

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